

REMARKS

Claims 12-15, 17-19 and 22 are of record pending in this application.

Claim Rejections

Claims 12-15, 17-19 and 22 remain rejected under 35 U.S.C. §103(a) as being unpatentable over Goodrich et al. (USPN 6,258,577) in view of Joshi PC.

Applicants continue to disagree with this rejection, as the Examiner has still not made a prima facie case of obviousness over the combined teaching of the prior art.

As set forth in MPEP 2143, "The rationale to support a conclusion that the claim would have been obvious is that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination yielded nothing more than predictable results to one of ordinary skill in the art." *KSR International Co. v. Teleflex Inc.*

As discussed in previous responses, Applicants continue to believe that, all of the elements of their claims were not known from either the Goodrich or Joshi references.

There is no disclosure in Goodrich of using riboflavin and light (at any wavelength) to inactivate white blood cells. Column 4, line 5 of Goodrich lists the microorganisms that may be treated with riboflavin and light. Viruses, bacteria, fungi and protozoa are listed. White blood cells are not. Therefore, there is also no disclosure of using riboflavin and light to cause damage to the nucleic acids of white blood cells and substantially maintaining the damage to the nucleic acids of white blood cells as Applicants' claim. Thirdly, and as the Examiner admits, Goodrich does not disclose the specific use of UVB light to inactivate white blood cells.

The Examiner cites the Joshi reference to cure the deficiencies of the Goodrich reference, in particular, for the teaching of the activation of riboflavin by UVB light.

The Joshi reference does teach that riboflavin generates singlet oxygen and superoxide anion radicals upon exposure to UVB light. However, Joshi also teaches that “photo oxidation of dioxyguanosine by riboflavin and UV radiation is of significant importance from the point of view of cell-damaging reactions by activated oxygen species produced by the synergistic action of sunlight and chemical agents. It is now known that activated oxygen species are responsible for skin photosensitization, tumor promotion and carcinogenic properties.”

Combining the teachings of Goodrich with the teachings of Joshi, one skilled in the art would think that irradiating blood products with riboflavin and UVB light would produce activated oxygen species which would cause damage to the red blood cells, platelets and plasma being irradiated, and cause tumor promotion and cancer in the irradiated cells. Furthermore, as neither Goodrich nor Joshi teach the irradiation of white blood cells with UVB light, one skilled in the art would not think to do this using the combined teachings of Goodrich and Joshi.

The Examiner argues that one of ordinary skill in the art would have been motivated to use the methods taught by Goodrich and Joshi in order to inactivate white blood cells and bacteria, viruses and parasites, and that there is clear motivation for combining the references. As set forth in MPEP 214301(IV), a statement that modifications of the prior art to meet the claimed invention would have been “well within the ordinary skill of the art at the time the invention was made” because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a prima facie case of obviousness without some objective reason to combine the teachings of the references.” *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993). Rejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” KSR 550 US at ___, 82 USPQ2d at 1398 quoting *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006).

The Examiner has not provided an objective reason to combine the teachings of the references. The mere statement that one skilled in the art would have been motivated to combine the references is not enough to establish a prima facie case.

The Examiner argues that “it would have been obvious to a skilled artisan to characterize the dose-response relationship for the inactivation of white blood cells in order to determine the minimum dose of UVB required for inactivating riboflavin which results in the inactivation of white blood cells” and points to Examples 5 and 6 for support of his position.

However, Example 5 studies the extent to which UV light without riboflavin can penetrate a red blood cell sample. Measuring the depth of UV light penetration into red blood cells is not “characterization of the dose-response relationship for irradiating cells with UV light in the presence of riboflavin” as stated by the Examiner. Firstly, Example 5 does not measure the effect of riboflavin and UV light, as there is no riboflavin present. Secondly, Example 5 does not measure the damage to red blood cells caused by riboflavin and UV light. The definition of penetration is “to pierce or pass into or through” (Random House Webster’s Unabridged Dictionary). Example 5 measures the distance into a red blood cell sample UV light can pass into. This is not measuring the effect of riboflavin and UV light on cell damage.

Example 6 does indirectly study the effect of riboflavin and UV light on platelets by measuring in vitro measurements of platelet function. However, platelets are not white blood cells. Platelets do not have nucleic acids and therefore the nucleic acids can’t be damaged by riboflavin and light. Combining the teachings of Ex. 5 and 6 would teach one skilled in the art to measure the distance UV light is able to penetrate into a sample containing red blood cells or platelets. It would not teach them to inactivate the nucleic acids of white blood cells.

Applicants respectfully request the Examiner to withdraw his objections and to pass this application to issue. If there are any questions, or if prosecution can be expedited in any manner by a telephone conference, the Examiner is urged to call Applicants’ representative at the below telephone number.

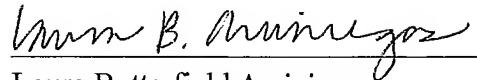
Applicants believe this paper as request for continued examination and response to the final office action of December 18, 2009 is filed on time. If this belief is incorrect, the Commissioner is authorized to charge Deposit Account No. 03-2316 for late fees.

Appln. No.: 10/648536
Reply to Final Office Action Dated December 18, 2009
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Date

Respectfully submitted,



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